CULTIVATION OF AFRICAN *CRINUM* IN POTS AND TUBS

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Horticulturists in the United States historically have regarded crinums as landscape plants. Quoting L.H. Bailey from **The Standard Cyclopedia of Horticulture** of 1950: "The crinums require so much room that they are not often seen in commercial collections in this country." Indeed, in his 1948 **Bulb and Plant Catalog** from Lakemont Gardens, Wyndham Hayward advertised his list of crinum bulbs under the heading "The Big Crinum Family." How much the concept "bigger is better" played in selecting the varieties introduced into cultivation is not known, but the endeavor to breed hardiness into commercial lines clearly doomed crinums to a garden or landscape existence. Of the many crinum hybrids which became popular since Herbert's time, most possessed the genetic code for vegetative propagation one bulb soon became many, creating an impractical situation for pot culture.

Many of the African *Crinum* species do not multiply vegetatively or only sporadically produce offsets, making them potential candidates for pot or tub cultivation. Most of these species are indigenous to regions falling outside the tropical rain forests, an ecological factor favorable to pot cultivation which will become apparent later. Unfortunately a word of caution is necessary: all too frequently, species advertised commercially or passed among contemporaries are actually hybrids. For example, I have never observed vegetative offsets among indigenous bulbs of *C. bulbispermum* in South Africa or among bulbs which I have subsequently grown from seed and cultivated in Southeast Texas, yet every planting of "*C. bulbispermum*" I have encountered in the Gulf Coast, including one I could trace to its origin from a bulb catalog circa 1905, and every bulb I have received via horticultural circles has produced offsets (hybrids). Let the buyer beware. (Note: occasionally a species which does not multiply vegetatively will produce offsets if the bulb is damaged, such as might occur during transplantation.)

The cultivation of African species differs from that of commercial crinum hybrids; the latter thrive in any garden with minimal attention when provided with sufficient water, sunlight, nutrients, and where appropriate hardiness conditions are met.

Cultivation of non-rainforest species is demanding, and stringent guidelines must be followed for successful pot or tub culture:

1. Knowledge of the indigenous habitat
2. Selection of appropriate pot or tub size
3. Manipulation of local climatic conditions
4. Water surveillance.

When choosing a pot for a given species, consult reference materials to obtain an idea of the ultimate or mature bulb diameter. With proper technique, the bulb will flourish and approach the upper range of bulb diameter listed in the reference. Diameter of the pot should be at least three times the anticipated bulb diameter. If the pot is too small, then the growth of the bulb will be impeded and it will experience stunting overall reduction in size, non-uniform size reduction in flowering parts, smaller umbels and fewer umbels. In Natal, I once saw three bulbs of an unknown *Crinum* species grown from seed in a single 4 inch [10cm] pot; the bulbs were small and crowded together, their leaves were very slender, 7-9mm [¼ inch] wide, and one bulb sported a small scape bearing one flower. When informed of the remote collection site, my initial impression was that it might be a new species. I acquired one bulb, which I transplanted into an 8 inch [21cm] pot upon returning home. Two years later, the bulb had 20mm [¾ inch] wide leaves and bore an 8-flowered umbel; it was *C. lugardiae*. It is better to err by choosing a larger pot you will be surprised at how large some of these bulbs will grow. This means that you will need a pot ±18-20 inches [50cm] diameter if you wish to avoid stunting with *C. bulbispermum* or *C. buphanoides*. Always utilize clay pots the material is porous and breathes, permitting better moisture control. Also, when selecting a pot of a given diameter, choose the **tallest** variety the increased depth helps to minimize root crowding.

African *Crinum* species indigenous to the non-rainforest regions can be classified into four ecological or habitat groupings: desert/semidesert, veld/forest, riverine/inundated, and vlei/semiaquatic. Again consult your reference materials as well as the world almanac. This information determines the soil and water requirements.

1. Arid desert species should be grown in a porous sandy soil containing a good percentage of vermiculite; these bulbs demand good drainage else they will succumb to root/basal rot. Excessive watering must be avoided! All species which produce papillose seeds fall into this category: *C. acaule* (Fig. 1.), *C. walteri* (syn. *C. minimum* sensu Verdoorn, non Milne-Redhead), *C. crassicaule* (synonym: *C. foetidum*), *C. harmsii*. Other examples include: *C. forbesii* (syn. *C. delagoense*),*C. lineare*, and *C. album**

(synonym: *C. yemense*), although these species are more water tolerant and flourish in well-drained sandy loam. [Note: the asterisk(*) identifies species which produce a few offsets.]

2. The veld/forest species do well in light-textured, sandy-clay loam. These bulbs should be watered regularly. Examples of this group include *C. politifolium**, *C. kirkii*, *C. graminicola* (Fig. 2.) and the related *Ammocharis nerinoides* (syn. *C. nerinoides*).

3. In the riverine/inundated group are those species which need moist, medium-textured, sandy-clay loam during the growing season. Some of these species endure periods of time in standing water in their native habitats. To ensure that the potting soil stays moist, place the pot in a water saucer and fill the saucer each time you water the bulb at least twice a week during hot weather. Examples are *C. baumii*, *C. lugardiae*, *C. macowanii*, *C. bulbispermum*, *C. buphanoides*, *C. variabile**, *C. fimbriatulum**, *C. broussonetii*, *C. humilis** (Fig. 3), *C. yuccaeides* and *C. abyssinicum*.

4. The vlei/semi-aquatic species require clayish soil and should be grown in a standard, 12 inch [33cm] deep, galvanized wash tub. Fill the tub with 10 inches [26cm] of soil when planting the bulb; this way, 1-2 inches [25-50cm] of standing water can be maintained above the bulb at all times during the growing season. Examples of this group are *C. paludosum* (Fig. 4.), *C. carolo-schmidtii*, *C. rautanenianum*, *C. campanulatum**, *C. pauciflorum* and *C. distichum*.

The non-tropical rainforest ecologies of Africa are usually characterized by distinct rainy seasons and dry seasons. Dry seasons may last as long as 8-9 months wherein little or no rainfall occurs. In arid regions drought is commonplace. *Crinum* species from these areas have adapted to dry dormant periods, and many will either rot or not flower regularly in cultivation unless given a dry dormancy. This obligatory condition readily lends itself to pot or tub cultivation, especially if one has a greenhouse. In lieu of the latter, a heated garage, enclosed porch, or a basement will work as well, although a few muscles will be needed to tote the larger pots. I normally cease watering from mid-November through mid-April which coincides with winter in my locality, resulting in five months of dry dormancy. For C. *campanulatum*, the dormancy is extended to 6 months. During the dormant period, leaves gradually die back to the base and all bulbs eventually become leafless. *Crinum bulbispermum* is an exception: it is minimally watered to maintain a low leaf profile. Bulbs need to be protected from freezing during dormancy, and a minimum ambient temperature of 45°F [7°C] is recommended. Damp soil + cold temperatures = death for many species listed in this article; that is probably why such species were never

introduced into commercial horticulture. Pot or tub culture eliminates the overwintering and moisture control problems.

Bulbs perform best when not disturbed. With proper pot size selection and maintenance, it should not be necessary to change potting soil for many years. Two cultivation tips need to be emphasized: 1. Regular applications of fertilizer are mandatory. Except for the desert species, fertilization can be supplemented with leaf mulching. 2. There is no substitute for rain water! If you want to be successful with crinums in pots, you should have one or more rain barrels strategically located about your home. Avoid city tap water.

Diseases and pests are local problems that often are common to other genera as well; I can only address my experiences while living in the Gulf Coast region. Owing to high humidity and rainfall, fungi are a constant threat and regular spraying with topical and systemic fungicides is necessary to prevent/control leaf spotting and other fungus infections. On occasions during very wet periods, a wet black rot may attack the central leaf column; if recognized early when still confined to decidual leaves, treatment with topical tetracycline is effective if it extends into the bulb neck, the underground neck must be quickly amputated else the rot spreads downward to the growth plate. Common pests include cutworms, caterpillars and slugs. Giant grasshopppers usually surface in August and are best eradicated with the sole of one's foot. Red spider mites are especially attracted to *C. variabile*.

Cultivation of crinums in pots and tubs has received little attention in horticulture circles because of the dominant position held by commercial hybrids which rapidly multiply. Careful selection of African species which do not propagate vegetatively yields a promising selection of bulbs ideally suited for pot and tub cultivation. Anyone who thinks that commercial hybrids are more beautiful has never beheld *C. graminicola* or *C. rautanenianum* or *C. lineare* in bloom. Among these African species are also a group of small bulbs which can easily be grown in 6-8 inch [15-20cm] pots, entirely dismissing the concept that crinums are landscape plants. Finally, for the hybrid enthusiasts, most of the small species readily cross and the resultant hybrids frequently lack the genes for vegetative propagation-yielding semi-dwarf hybrids suitable for pot and tub cultivation.

LITERATURE CITED

Bailey, L.H. 1950. **The Standard Cyclopedia of Horticulture**. The Macmillan Company, New York.

Figure 1: Arid desert species in a pot: *Crinum acaule* baker from Makakatana, Natal, South Africa.

Figure 2: Veld/forest species in large pots. *Crinum graminicola* Verdoorn from Haenertsburg, Transvaal, South Africa.

Figure 3: Riverine/inundatedspecies in a small pot: *Crinum humilis* A. Chev. from Maroua, Cameroun.

Figure 4: Vlei/semi-aquatic species/hybrids in tubs: Bulb in flower is an interspecific hybrid; the seed parent was *Crinum paludosum* Verdoorn from Ndumu, Natal, South Africa.

Photos: David J. Lehmiller